



## ***Portable, Dust Free Dry Material Feeder Loss-in-Weight Batching System***

***Manufacturer – 3Sigma***

***Product – Glass Beads***

***Case History #113***

### **Background**

A Midwestern Fortune 100 firm was in need of a portable, dust free, accurate dry material feeding system to properly batch their product to numerous mixers. The product needed to be loaded at waist level, then the entire system is manually moved to a mixer, raised to approximately 6' discharge height and the proper amount is then batched into the mixer. The environment is rated Class I, Div 1.

### **Existing Problem**

- The customer's product is extremely light and extremely dusty. Airborne dust had become a serious health hazard.
- The customer would manually scoop product from a drum into a plastic bag while weighing it on a platform scale creating the airborne dust and potential health hazards. This bag would be sealed until needed.
- The bag would then be opened, at the appropriate mixer, and manually dumped in, creating the airborne dust and potential health hazards again.

### **The Solution**

Based upon previous successful applications with our parent company, Carolina Material Technologies, the company contacted us once again in search of a solution that would:

- Allow for dust tight filling of the product at grade level.
- Allow the weighing system, approximately 1,000#, to be easily moved, manually, to the various mixer locations.
- Allow the operator to input the desired batch weight at the portable station.
- Provide for feeding directly into the mixer 6' off grade.
- Provide accurate and automatic batching without the need for operator interface.

### **To Meet these Requirements 3Sigma Provided:**

- A fabricated platform, with fork truck pockets. A heavy-duty platform scale is attached to this frame, which supports the feeder and bag dump station. This platform also allows the pallet server to be removed and used at other locations.
- A pallet server to easily move the system from point A to point B and raise the dry material feeding system above the mixers for proper batching. The lifting is completely air operated.
- A filtered bag dump station with ex-proof motor and air operated solenoids to eliminate airborne dust.
- A heavy-duty scale that met the accuracy demands while holding calibration while being constantly moved.
- A Screw Feeder to properly batch their product, while totally controlling this floodable product. Explosion proof motor.
- A battery operated batching control mounted to the portable system.
- An explosion proof control panel, mounted to the platform.

### Dry Material Feeding System At Grade Level for Loading



### Dry Material Feeding System Raised to Batch to Mixer



Filtered Bag  
Dump Station

Batch Control

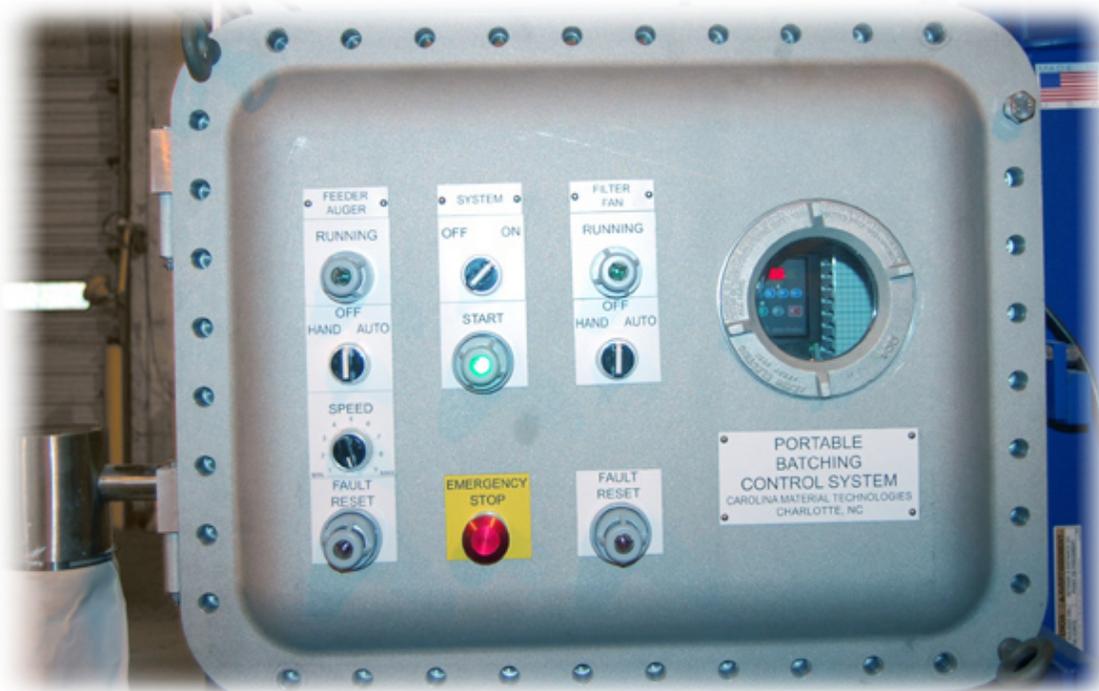
35" off grade to  
load system  
dust free

Ex-Proof  
Control Panel  
System raised  
3.5' at the lab  
for testing

**Mass Flow Design + No Moving Parts =  
Highest Reliability, Period**



### Mounted Ex-Proof Panel



## Results

- The system was installed in 2011. To date we have replaced one faulty Mac air valve.
- The system has exceeded their dust control and ergonomic requirements.
- The system repeatedly doses 5 to 70# with an accuracy of  $\pm 0.02$  lbs.
- The customer is extremely pleased with the system. We are awaiting their expansion for the addition of a duplicate system.

Due to confidentiality agreements we cannot provide detailed customer information.  
We may be able to schedule a conference call upon request.

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